

**WHAT IS CLAIMED IS:**

1. An apparatus for compensating the gain of an automatic gain controller (AGC) in a receiver including the AGC for controlling the gain of  
5 received packet data in a mobile communication system where packet data is discontinuously transmitted, comprising:

a compensation controller for receiving an AGC value from the AGC, sampling the AGC value by a predetermined sample number for a predetermined period, and obtaining an AGC compensation gain by calculating the difference  
10 between a sampled AGC value with a reference gain for the predetermined period; and

a compensator for compensating the AGC value with the AGC compensation gain, thereby correcting errors generated in view of the nature of the AGC.  
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2. The apparatus of claim 1, wherein the reference gain comprises the AGC value extracted at the start of the predetermined period and temporarily stored.

20 3. The apparatus of claim 2, wherein the compensation controller comprises:

a timing controller for generating a reference gain clock signal in the predetermined period, and generating a gain clock signal by dividing the frequency of the reference gain clock signal by the predetermined sample  
25 number;

a sampler for sampling the AGC value for the predetermined period in response to the gain clock signal;

a storage for temporarily storing the AGC value and outputting the AGC value as the reference gain for the predetermined period in response to the  
30 reference gain clock signal;

a first subtractor for subtracting the AGC value sampled in response to the gain clock signal from the reference gain and outputting the difference as a compensation gain; and

a first look-up table for obtaining the AGC compensation gain by  
5 outputting a stored value corresponding to the compensation gain.

4. The apparatus of claim 3, wherein the predetermined period comprises one slot including a transmission unit of packet data.

10 5. The apparatus of claim 2, further comprising an offset compensator for compensating the power level of the compensated AGC value with an AGC compensation offset calculated in the compensation controller.

6. The apparatus of claim 5, wherein the compensation controller  
15 comprises:

a timing controller for generating a reference gain clock signal in the predetermined period, and generating a gain clock signal by dividing the frequency of the reference gain clock signal by the predetermined sample number;

20 a sampler for sampling the AGC value for the predetermined period in response to the gain clock signal;

a storage for temporarily storing the AGC value and outputting the AGC value as the reference gain for the predetermined period in response to the reference gain clock signal;

25 a first subtractor for subtracting the AGC value sampled in response to the gain clock signal from the reference gain and outputting the difference as a compensation gain; and

a first look-up table for obtaining the AGC compensation gain by outputting a stored value corresponding to the compensation gain.

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7. The apparatus of claim 6, wherein the predetermined period comprises one slot including a transmission unit of packet data.

8. The apparatus of claim 7, wherein the compensation controller  
5 further comprises:

a second subtractor for subtracting the reference gain for a present period from a reference gain for a next period extracted in response to a next reference gain clock signal when the predetermined period expires and outputting the difference as a compensation offset; and

10 a second look-up table for obtaining the AGC compensation offset by outputting a stored value corresponding to the compensation offset.

9. The apparatus of claim 1, further comprising a symbol energy estimator for estimating the energy of the compensated AGC value received from  
15 the compensator and normalizing the estimated energy.

10. A method of compensating the gain of an automatic gain controller (AGC) in a receiver including the AGC for controlling the gain of received packet data in a mobile communication system where packet data is  
20 discontinuously transmitted, comprising the steps of:

(1) receiving an AGC value from the AGC, sampling the AGC value by a predetermined sample number for a predetermined period, and obtaining an AGC compensation gain by calculating the difference between a sampled AGC value with a reference gain for the predetermined period; and

25 (2) compensating the AGC value with the AGC compensation gain, thereby correcting errors generated in view of the nature of the AGC.

11. The method of claim 10, wherein the reference gain comprises the AGC value extracted at the start of the predetermined period and temporarily  
30 stored.

12. The method of claim 11, wherein the step of (1) comprises the steps of:

generating a reference gain clock signal in the predetermined period, and  
5 generating a gain clock signal by dividing the frequency of the reference gain clock signal by the predetermined sample number;

sampling the AGC value for the predetermined period in response to the gain clock signal;

temporarily storing the AGC value and outputting the AGC value as the  
10 reference gain for the predetermined period in response to the reference gain clock signal;

subtracting the AGC value sampled in response to the gain clock signal from the reference gain and outputting the difference as a compensation gain; and

obtaining the AGC compensation gain by outputting a stored value  
15 corresponding to the compensation gain.

13. The method of claim 12, wherein the predetermined period comprises one slot including a transmission unit of packet data.

20 14. The method of claim 11, further comprising the steps of:

obtaining an AGC compensation offset using the difference between the reference gain for a present period and a reference gain for a next period extracted in response to a next reference gain clock signal when the predetermined period expires; and

25 compensating the power level of the compensated AGC value with the AGC compensation offset.

15. The method of claim 14, wherein the AGC compensation offset obtaining step comprises the steps of:

30 generating a reference gain clock signal in the predetermined period, and

generating a gain clock signal by dividing the frequency of the reference gain clock signal by the predetermined sample number;

sampling the AGC value for the predetermined period in response to the gain clock signal;

5 temporarily storing the AGC value and outputting the AGC value as the reference gain for the predetermined period in response to the reference gain clock signal;

subtracting the AGC value sampled in response to the gain clock signal from the reference gain and outputting the difference as a compensation gain; and

10 obtaining the AGC compensation gain by outputting a stored value corresponding to the compensation gain.

16. The method of claim 15, wherein the predetermined period comprises one slot including a transmission unit of packet data.